Amendments to the Specification:

Please replace paragraph [0001] with the following amended paragraph [0001]:

[0001] The present invention relates to a process and system for processing fruit juice and to a juice deacidification process and system utilizing ~~ion exchange~~ ion-exchange resin columns. More particularly, the invention provides operating conditions which enhance deacidified product quality.

Please replace paragraph [0011] with the following amended paragraph [0011]:

[0011] Another object of the present invention is to provide a process and system for deacidifying NFC juices that do not compromise the standard of identity required for such juice products.

Please replace paragraph [0021] with the following amended paragraph [0021]:

[0021] FIGS. 4A-4C are plots of pH of blended juice versus ratio of untreated juice to treated juice in the blended juice for various ~~Bed Volumes~~ bed volumes of juice subjected to the deacidification process of the present invention, the untreated juice of this illustration having a pH of 3.94 and a titratable acidity of 0.61% for FIG. 4A, a 3.82 pH and 0.65% titratable acidity for FIG. 4B, and a 3.65 pH and 0.75% titratable acidity for FIG. 4C.

Please replace paragraph [0023] with the following amended paragraph [0023]:

[0023] Deacidification of citrus juice may take place in any number of known devices. For example, the form of ~~ion exchange~~ ion-exchange resin equipment used in deacidification of citrus juice may be a flow-through column and/or a continuous system or semi-continuous system. Another possibility is the use of resins in a bed formation, such as in an overall batch approach. Ion-exchange ~~Ion exchange~~ technology may be utilized to deacidify juice in any number of possible devices, provided that the resins are allowed to contact the juice during the process.

Please replace paragraph [0024] with the following amended paragraph [0024]:

[0024] The resins used in ~~ion exchange~~ ion-exchange technology may likewise be of a wide variety. Resins of any level of binding affinity may be used, depending on the acidity of the juice. In one preferred embodiment, the resin used is a weakly-basic,

anionic exchange resin, often a polystyrene copolymer which contains a tertiary amine group as a functional group. This weakly-basic resin is preferred because of its ability to pull organic acids such as citric acid from the juice, thereby producing a deacidified juice stream.

Please replace paragraph [0025] with the following amended paragraph [0025]:

[0025] Examples of other commercial resin systems include those incorporating ~~ion exchange~~ ion-exchange resins such as anionic polystyrene copolymers which release chloride groups and basic anionic polystyrene resins having quaternary ammonium active groups. Specifically, resins such as Amberlite IRA-67, Amberlite IRA-95, Dowex 67, Dowex 77 and Diaion WA 30 may be used.

Please replace paragraph [0026] with the following amended paragraph [0026]:

[0026] Deacidification of juice takes place as a juice stream is passed through or otherwise contacts the resin bed. The juice used may be any fruit or vegetable single strength juice which has not been concentrated, preferably a NFC citrus juice, including orange and grapefruit, the most preferred juice being orange juice. To deacidify the citrus juice using ~~ion exchange~~ ion-exchange technology, a juice stream comes in contact with the ~~ion exchange~~ ion-exchange resins. The preferred method uses a juice stream that is passed through the resin structure, such as the resin bed or column. As the juice contacts the resins, ~~ion exchange~~ ion-exchange takes place in accordance with known principles.

Please replace paragraph [0027] with the following amended paragraph [0027]:

[0027] In ~~ion exchange~~ ion-exchange deacidification, when the juice stream comes in contact with the resin, the ions of the juice are exchanged with those of the resin. In the preferred embodiment, acidic juice comes in contact with, and is attracted to, the weakly-basic polystyrene resin. When citrus juice is treated, the ~~ion exchange~~ ion-exchange resin adsorbs the citrus ions of the citrus juice. Adsorption is the accumulation of ions on a resin pore surface, resulting in a relatively high concentration of the ions at the resin's surface. After citrate ions of the juice stream are adsorbed by the resin, the stream is substantially less acidic.

Please replace paragraph [0029] with the following amended paragraph [0029]:

[0029] The general overall process may be run at various temperatures. However, it is preferred that the overall process be performed at refrigerated temperatures (i.e., less than about 45° F. and preferably between about 35° F. and 45° F.) to produce a higher quality juice product. It has been determined that the quality of the resulting juice product is greatly enhanced by conducting the process at these low temperature levels, even though this would be expected to reduce the efficiency of the solid/liquid separation of step (b) and the ~~ion exchange~~ ion-exchange efficiency of the resin of step (c). It has been found that very satisfactory results and minimal negative operational aspects have been experienced.

Please replace paragraph [0034] with the following amended paragraph [0034]:

[0034] If the suspended solids are at or below the selected maximum volume percent, the juice then is treated or otherwise processed to inactivate or remove enzyme, for example by heat treatment. This also can be used to pasteurize, if needed. If the juice has been previously thus treated or pasteurized, it goes directly from the centrifuge 16 to the ~~ion exchange~~ ion-exchange resin columns 18, 20 for deacidification in accordance with the present invention. If not, the juice is directed from the centrifuge 16 to a balance tank 22. It is then rapidly heated at 24, and then chilled, before being directed to the resin columns 18, 20.

Please replace paragraph [0036] with the following amended paragraph [0036]:

[0036] With reference to FIG. 2, each resin column 18, 20 is partially filled (approximately half-filling being shown) with ~~ion exchange~~ ion-exchange resin beads 26. The composition of such beads is well-known. See, for example, U.S. Pat. Nos. 4,522,836 and 4,666,721 which are incorporated hereinto by reference. Through a series of piping and flow control valves well known in the art, the resin columns 18, 20 are configured to selectively admit either juice or water.

Please replace paragraph [0046] with the following amended paragraph [0046]:

[0046] Then, when it is determined that the deacidified juice exiting the column meets SOI criteria of the single strength juice, product can be collected as deacidified single strength or NFC juice. This is generally shown in STEP 2C. With the invention, this is accomplished after a turn over of as little as one resin ~~Bed Volume~~ bed volume. This is the volume of the beads within the vessel. Somewhat greater than one ~~Bed Volume~~

bed volume can be displaced before diverting the outflow to production, such as after about 11/2 ~~Bed Volumes~~ bed volumes, to provide a measure of safely to assure that only juice meeting SOI criteria is collected as single strength or NFC product.

Please replace paragraph [0052] with the following amended paragraph [0052]:

[0052] By use of this "juice dome" process and system, the juice yield has been increased approximately 10 percent, as compared to a standard method using a "water dome." Specifically, the "juice dome" facilitates control of the water-juice interface in the resin column. As a consequence, the number of ~~Bed Volumes~~ bed volumes of liquid that are processed by the resin columns during the transitions to and from the production phase of the deacidification process is minimized, thus minimizing the dilution of the NFC or single strength juice that would otherwise be waste or be suitable only for non-NFC juice products and the like. As little as one ~~Bed Volume~~ bed volume of liquid is needed for the sweeten-on phase before single strength SOI criteria are reached. Less than 2 ~~Bed Volumes~~ bed volumes of liquid are processed during sweeten-off phase before the diluted deacidified juice is no longer suitable to recover for use in non-NFC products and the like.

Please replace paragraph [0055] with the following amended paragraph [0055]:

[0055] At least in the initial stages of deacidification when the resin column is most effective, i.e., the initial ~~"Bed Volumes"~~ "bed volumes" of juice passing through the column, the acidity level of the deacidified juice may be sufficiently low--and the pH sufficiently high--that undesirable microbial activity in the deacidified juice could occur. Thus, as mentioned above, a portion of non-deacidified juice preferably is added back to the deacidified juice immediately upon its flow out of the resin columns in order to raise the acidity--and lower the pH--of the resulting blend to a level that discourages microbial activity. A pH of about 4.5 or below is effective for this purpose.

Please replace paragraph [0056] with the following amended paragraph [0056]:

[0056] In practice, the immediate addition of untreated juice in a ratio of between about 2:1 and about 1:1 with respect to the deacidified juice may be necessary for the first 10 to 12 ~~Bed Volumes~~ bed volumes of deacidified juice to keep the pH lower than about 4.5. See the plots of pH versus ratio of untreated juice to treated juice taken at various ~~Bed Volumes~~ bed volumes (i.e., 1, 3, 6, 9, 12, 15 and 18) shown in FIGS. 4A, 4B and

4C, which empirically show that ratios of untreated juice to treated juice of between about 1:1 and about 2:1 should ensure a pH of 4.5 or below. Depending upon the precision of the pH measurement techniques or pH monitor, in practice it can be desirable to provide a safety cushion by targeting a lower pH, e.g., 4.4 or 4.3. After the pH of the deacidified juice exiting the resin column drops below 4.3-4.5, the immediate addition of untreated juice to raise the acidity is no longer necessary.

Please replace paragraph [0058] with the following amended paragraph [0058]:

[0058] From the inlet 10 to the system, 83 gpm of untreated juice is directly diverted to the blend tank 14. The remaining 50 gpm of untreated juice is directed to the centrifuge <u>feed tank</u> 12. The untreated NFC juice has the following characteristics: Temperature (35° F.); Acidity (0.68% w/w); pH (3.8); Suspended solids (11%); Oil (0.030% v/v); Ascorbic acid (40.9 mg/100 ml); and Calcium (81 ppm).